

CDMS(Cryogenic Dark Matter Search)
FEDUP(Front End Diagnostic Unit Profiler) MODULE (Version 1)

USERS MANUAL

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The FEDUP Module was designed as an aid in performing diagnostic tests on the CDMS detector electronics, via the 50-pin connector in the ZIP Module Crates(also called Subracks). For the purpose of diagnostics, this module has two Lemo connectors on the front panel and one 50 pin connector on the rear panel. The FEDUP Module has 100 reed relays, 50 for each Lemo connector, which allows one (via computer control) to connect either Lemo connector to any one pin of the 50-pin connector, thus providing 50 x 50, or 2500 connection possibilities.

In practice, one would most likely connect the two measuring inputs of a computer-controlled-multimeter to the two lemo connectors on the front panel of the FEDUP Module, and via computer control, have the FEDUP Module select various combinations of two pins on the 50-pin connector.

The FEDUP module uses two addresses, 0 & 7, as illustrated below. Address 0 is read only and provides a 16 bit word containing the "Module Type", the module "Version #"and the module "Serial #". The FEDUP Module is Type 7 and this version is 1. The serial number depends on which module is being read.

Address 7 can be read, or written to and also contains a 16 bit word. The Most Significant Byte(MSB) selects which pin number will be connected to the top Lemo (6 MSB) connector on the front panel, and the Least Significant Byte(LSB) selects which pin number will be connected to the bottom Lemo (6 LSB) connector on the front panel. Reading address 7 provides the last written data to this address.

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
MODULE TYPE				VERSION #				SERIAL #							

Address 0 (Read only)

16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
UNUSED		DATA WORD B						UNUSED		DATA WORD A					

Address 7 (Read/Write)

Writing data to the board at address 7, in the form of one 16-bit word, will get two combinations of pin numbers. Group "A" address is the lower 8 bits of the 16 bit word and Group "B" is the upper 8 bits of the word. Even though only the lower 6 bits of either 8-bit word are used. The pin selected can be anywhere from 1 to 50 for either group.

When a HEX data word like "0a1b" is written to the board, thru the logic on the board, this translates into word "B" of pin 10 and word "A" of pin 27. The analog switches then tie the selected pins together at the lemo connector, with "B" being the ground of one lemo and the center connection of the other lemo, with "A" being the opposite of "B" on either lemo. If a data word of "0" is written or a value greater then "50", no pins will be tied to the lemos.

The front panel of the Module has two groups of six leds. Each group representing the address of the selected pin in a binary format. Word B would have the 8 and 2 led lit and word A would have the 16, 8, 2 & 1 led lit for the HEX data word of "0a1b".

Testing The FEDUP Module

Two test cards were fabricated for testing the FEDUP Module. These cards were designed to plug directly into the 50-pin connector on the FEDUP Module. The test card has all 50 pins shorted together and to FEGND. The second card had 1k, +/-1% ohm resistors tied between each of the pins such that the resistance between pin (n) and pin (n+m), is nominally mk ohm. These test cards allows one to write a relatively simple routine to test the FEDUP Module and the functioning of the meter.